

## **Claims**

1. Implant for temporary or permanent introduction into a human or animal body of at least one biocompatible material with a shape that is oriented to fulfill one or more first functions,  
**characterized by the fact that**  
the shape has one or more areas (1, 18) in which, as second function, elasticity or mobility is provided, with the implant having material recesses (7, 19) in the area or areas which serve to locally reduce rigidity and are provided in addition to the shape caused by the first functions.
2. Implant of claim 1,  
**characterized by the fact that**  
the implant or at least parts thereof with areas of first and second functions are formed integrally from one material.
3. Implant for temporary or permanent introduction into a human or animal body of at least one biocompatible material with a shape that is oriented to fulfill one or more first functions and at least in one area a second function as regards elasticity or mobility,  
**characterized by the fact that**  
the implant or at least parts thereof, which comprise the areas with and without elasticity or movement functions (second function), are formed integrally from one material and the area (1, 18) of second function has material recesses (7, 19) that serve to locally reduce rigidity.
4. Implant of any of the previous claims,  
**characterized by the fact that**  
in the area or areas, the elasticity or movement function (second function) is provided in addition to one or more first functions.
5. Implant of any of the previous claims,  
**characterized by the fact that**  
the area or areas are formed with material recesses as compression or expansion zones, torsion zones and/or as articulated joints, which are especially integrally connected with other functional areas.

6. Implant of any of the previous claims,  
**characterized by the fact that**  
the biocompatible material is of a rigid, especially under the intended conditions of use, flexurally rigid material.
7. Implant of any of the previous claims,  
**characterized by the fact that**  
the biocompatible material is selected from the group that comprises titanium and alloys thereof as well as plastics.
8. Implant of any of the previous claims,  
**characterized by the fact that**  
the material recess (7, 19) is formed as a groove-like recess and/or as an open aperture of the wall, especially in a helical shape.
9. Implant of any of the previous claims,  
**characterized by the fact that**  
two material recesses are formed as a groove-like recess and/or as an open aperture arranged twin-track helically inside each other.
10. Implant of any of the previous claims,  
**characterized by the fact that**  
the implant comprises an implant part of a flexible material, especially of an elastomer, that acts together with the implant part with material recesses to achieve a flexibility such that a definitive rigidity or mobility of the overall implant can be set.
11. Implant of any of the previous claims,  
**characterized by the fact that**  
the implant is a space holder (10) for vertebrae and/or intervertebral discs with space-holder and weight-transfer function as first functions and/or a connection rod (20) for pedicle screw arrangements with supporting and connection function as first functions, with especially a system of space holders and pedicle screw connection being provided.
12. Implant of any of the previous claims,  
**characterized by the fact that**  
the implant has a tube-like body (1) and, on the ends of the tube-like body, has means (2) for connecting to adjacent body parts or other implants or implant parts, with the material recesses in the tube-like body being provided, such that the implant is

compressible and extensible in the axial direction and, with reference to the means of connection (2) provided on the ends is bendable about a radial turning axis (13) and torsionable about an axial rotating axis.

13. Implant of claim 12

**characterized by the fact that**

the tube-like body (1) is surrounded by a sleeve consisting of an elastic biocompatible material or/and is provided with a core consisting of an elastic biocompatible material.

14. Implant of claim 13,

**characterized by the fact that**

the sleeve and/or the core are held by end plates arranged on the tube-like body integrally and/or detachably, especially by a screw or thread connection.

15. Implant of any of claims 13 or 14,

**characterized by the fact that**

the elastic material is an elastomer.

16. Implant of any of the previous claims,

**characterized by the fact that**

the implant and especially the tube-like body, expressed in terms of its longitudinal direction, is elastically extensible or compressible by 0.5 to 20%, especially 1 to 15%.

17. Implant of any of the previous claims,

**characterized by the fact that**

the implant and especially the tube-like body (1) is elastically bendable about a radial axis (3), such that the means of connection (2) provided at the ends can pivot by approximately 0.5 to 10°, especially 1 to 6° from the longitudinal axis (12) of the tube-like body.

18. Implant of any of the previous claims,

**characterized by the fact that**

the implant and especially the tube-like body is torsionable about the axial axis by 0.5 to 10°, especially 1 to 6°.

19. Method for producing an implant from biocompatible material, especially in accordance with any of the preceding claims, from a body with a wall around an axis,

**characterized by the fact that**

along the wall around the axis, at least one material recess, especially a helical material

recess, is milled in the form of a groove-like or slot-like recess mechanically, chemically or in any other way, especially by laser treatment .

20. Method of claim 19,

**characterized by the fact that**

two material recesses are milled as groove-like or slot-shaped recesses, such that they are arranged twin-track helically inside each other coaxial to the axis.

21. Method of claim 19 or 20,

**characterized by the fact that**

the body is a solid body, especially a solid cylinder, in which, before or after milling of the material recess(es), a bore hole is incorporated along the axis to generate a hollow body, with especially the remaining wall being narrower than the depth of the groove-shaped recess.

22. Implant of any of claims 19 or 20,

**characterized by the fact that**

the body is a pipe or a beaker.